

Soudan Laboratory Operating Budget

Gina Rameika

May 14, 2003



Outline

- History/Background (FY98-00)
 - pre-MINOS days
 - Pre-Construction
 - Cavern Construction
- Detector Construction (FY01-03)
 - Data
 - Extrapolation to Operations



- Pre-FNAL MINOS/CDMS
 - Soudan Lab supported by
 DOE Grant to UofM HEP
- Summer '97
 - Agreement with FNAL to begin supplementing support for activities at SUL
- November '97
 - Construction funds in NuMI project for Cavern and detector construction
 - Operating support also included in NuMI/MINOS Project

	FY98	FY99	FY00
S2 Account	1 1 70	1 1//	1 100
Crew Salary	96468	104763	62251
Crew fringe benefits	26748		14794
Telephone	15579		7493
Detector Gas	24322	31752	31972
DNR Payments	65354		12203
Apartments	9270		8360
BFI (Waste)	2995	3197	2988
Shipping	1478		558
Computer	24856		11007
Travel	504	624	12009
Car rental	5348		8693
Miscellaneous	27443		28552
S2 Total		321482	200880
52 10ta1	300303	321402	200000
MINOS FNAL #1			
Crew salary	32533	129343	146558
Crew fringe benefits	8581	34456	36179
Network/telephone	0001	350	22939
DNR Payments		14941	75621
Computer		1647	2025
Crew travel		5967	5185
Academic Salary		27650	
Academic fringe		7494	
Indirect Costs	10691	57077	77280
Misc		1032	16326
FNAL #1 Total	51805		382113
MINOS FNAL #2			
Crew Salary	72172	2535	125061
Crew fringe	19958	649	31107
Indirect Costs	23954	827	
FNAL#2 Total	116084	4011	156168
CDMS FNAL			
Crew salary		45154	19734
Crew fringe		11069	4898
Telephone			291
DNR			9455
Misc			2502
Indirect Costs		14300	8114
CDMS Total		78545	44994
Totals	352170	679634	627987
SWF Total (no Indi		354551	440582
	73%	52%	70%



Operation's Support from MINOS Project (OPC)

• FY98 \$172K

• FY99 \$315K

• FY00 \$329K

• FY01 \$342K

• FY02 \$362K (WBS 3.4) + \$322K (WBS 4.0)



Funding Method

- FNAL/U of M MOU (MINOS Construction, CDMS)
- Quarterly SOW (MINOS)
- FNAL issues P.O.s to UofM HEP Group to cover ~ amount described in SOW or MOU
 - Task breakdown (budget code) by SWF, M&S or constuction
- U of M performs work, pays bills
- U of M submits invoice for charges consistent with P.O.



MINOS Expenses (covered by OPC during Project)

- MINOS Cavern Lease
- Equipment (Boom truck, utility truck, forklift)
 - Lease
 - Fuel
 - Maintenance & Repair
- Surface Building (lease, utility)
- Minecrew oversight/operations support
- Minecrew M&S support (travel,internet,employment adds)



FY01

• Beginning October 2000: Monthly Expenses sent to FNAL for review

6405	12/8/04	\$194.26 CITIZENS COMMUNICATIONS	T1 line-frame relay-753-0912
6405	12/8/04	\$901.80 AT & T	Long distance underground-all lines
6405	12/9/04	(\$46.00) SUNNY HILL DISTRIBUTORS INC	BUHL WATER 5 GAL
6405	12/9/04	\$220.00 SUNNY HILL DISTRIBUTORS INC	BUHL WATER 5 GAL
6405	12/12/04	\$8.98 ACE HARDWARE INC	ACE-Kleen Sweep
6405	12/12/04	\$8.98 ACE HARDWARE INC	ACE-Kleen Sweep
6405	12/12/04	\$9.99 ACE HARDWARE INC	ACE-Kleen Sweep
6405	12/12/04	\$14.27 ACE HARDWARE INC	ACE HARDWARE INC
6405	12/12/04	\$14.47 ACE HARDWARE INC	Ace-Kleen sweep and trash bags
6405	12/12/04	\$33.90 ACE HARDWARE INC	Anchors, trash bags
6405	12/12/04	\$171.86 ACE HARDWARE INC	Materials for safety gate
6405	12/13/04	(\$2.80) GRANDE HARDWARE CO	PO 53362004083
6405	12/13/04	\$42.98 NAPA PARTS CTR INC	NAPA PARTS CTR INC
6405	12/13/04	\$43.12 GRANDE HARDWARE CO	PO 62004083
6405	12/13/04	\$120.25 PORTABLE JOHN	12/01/0-Porto-Poties
6405	12/13/04	\$187.08 JAMES G MEN INC	Garbage pickup
6405	12/13/04	\$5,000.00 DEPT OF NATURAL RESOURCES	MISC USE LEASE
6405	12/14/04	\$11.23 MCMASTER CARR SUPPLY CO	FREIGHT-Brakets
6405	12/14/04	\$96.26 CITIZENS COMMUNICATIONS	Phone-Surface building fax-753-8920
6405	12/14/04	\$197.91 CITIZENS COMMUNICATIONS	Phone-Surface building voice-753-8990
6405	12/14/04	\$226.26 JACK ZORMAN	MINOS SURFACE BLDG
6405	12/14/04	\$247.00 MCMASTER CARR SUPPLY CO	Brackets, Sprinkler system
6405	12/15/04	(\$4.94) MCMASTER CARR SUPPLY CO	•
6405	12/15/04	\$20.96 GRANDE INDUSTRIAL	PO 62004083
6405	12/15/04	\$106.66 CITIZENS COMMUNICATIONS	Phone-Miller modem line-365-8800

Total # items at year's end: 2,344

```
In 4 UofM Accounts:
6384 Soudan 2
6405 MINOS
6436 DNR
6421 CDMS
```

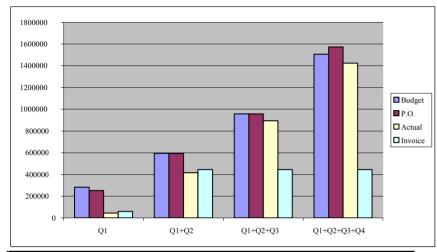
+ 6390 Cavern



Facility Operation WBS

4.1	Facility Operations FY01				
4.1 .1	Mine Crew Salary				
4.1 .1.1	Cre w Sup er visor				
4.1 .1.2	Safet y O ffice r				
4.1 .1.3	Syste ms A dm inistra tor				
4.1 .1.4	Office Ass ista nt				
4.4 .1.5	Facility House keeping				
4.1 .2	DNR				
4.1 .2.1	Elect ricity				
4.1 .2.2	Hoist T rips				
4.1 .2.3	Hoist man				
4.1 .2.4	Lab or				
4.1 .2.5	MINOS Cavern Lease				
4.1 .3	Surface Building				
4.1 .3.1	Lease				
4.1 .3.2	Utilities				
4.1 .4	Water &Waste				
	Mana ge me nt				
4.1 .5	Comm/ Net wo rk/C o mp				
	Telephone				
	Net working Fees				
	Compu te r ma inte nan ce				
4.1 .6	Auto				
4.1 .6	Auto Car Renta l, Gas, Mainte nance				
4.1 .6	Auto				
	Auto Car Renta l, Gas, Mainte nance Other				
4.1 .6	Auto Car Renta l, Gas, Mainte nance				
4.1 .7	Auto Car Renta I, Gas, Mainte nance Other Safet y Equip/Improv				
	Auto Car Renta l, Gas, Mainte nance Other				
4.1 .7	Auto Car Renta I, Gas, Mainte nance Other Safet y Equip/Improv Supplies				
4.1 .7	Auto Car Renta I, Gas, Mainte nance Other Safet y Equip/Improv				
4.1 .7	Auto Car Renta I, Gas, Mainte nance Other Safet y Equip/Improv Supplies				





	FY01	
2.4	864,611	55%
3.4	378,836	24%
4.0	329,729	21%
	1,573,176	

~20% budget allocated to facility operating

FY	WBS	Description	SOW	P.O. Amount
FY99	3.4	MINOS Support		314,900
FY00	3.4	MINOS Support		329,000
FY01	4.1	E die O	76.967	76.967
	4.1	Facility Ops	76,867	76,867
	4.2	Facility Infrastructure	5,670	5,670
	2.4.2	Engineering Oversight	24,140	24,140
	2.4.3	Engineering Oversight	48,263	-
	2.4.4	Infrastructure Setup	10,000	10,000
	2.4.6	DNR Costs	5,072	5,072
	3.4.1	Minecrew Support	76,826	76,825
	3.4.2	Surface Bldg. Rental	11,844	29,610
	3.4.3	EAP SWF	23,857	23,857
			282,539	252,041
	4.1	Facility Ops	65,955	65,955
	4.2	Facility Infrastructure	14,490	14,490
	2.4.2	Engineering Oversight	41,903	41,903
	2.4.3	Engineering Oversight	48,241	96,504
	2.4.4	Infrastructure Setup	42,510	42,510
	2.4.6	DNR Costs	5,072	5,072
	3.4.1	Minecrew Support	51,723	51,722
	3.4.2	Surface Bldg. Rental	17,766	- ,
	3.4.3	EAP SWF	23,857	23,856
			311,517	342,012
	4.1	E di O	60.550	60.550
	4.1	Facility Ops	69,558	69,558
	4.2	Facility Infrastructure	27,631	27,631
	2.4.2	Minecrew Management	32,683	32,683
	2.4.4	Infrastructure Setup	126,371	126,371
	2.4.6	DNR Costs	5,072	5,072
	3.4.1	Minecrew Support	50,186	50,186
	3.4.2	Surface Bldg. Rental	27,766	27,766
	3.4.3	EAP SWF	23,857	23,857
			363,124	363,124
	4.1	Facility Ops	69,558	69,558
	4.2	Facility Infrastructure		
	2.4.2	Minecrew Management	40,697	36,959
	2.4.4	Infrastructure Setup	333,052	394,225
	2.4.6	DNR Costs	38,850	44,100
	3.4.1	Minecrew Support	49,430	53,013
	3.4.2	Surface Bldg. Rental	17,766	18,144
	3.4.3	EAP SWF		
			549,353	615,999



FY02

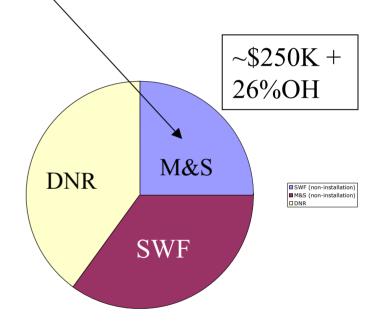
- MINOS Detector installation in full swing
 - Funded by WBS 2.4
- Project Operating funds (WBS 3.4): \$368K
- Off-project funds (WBS 4.0): \$322K
- Note that WBS 3.4 funds for FY03 were baselined at \$\$0 ⇒ importance of really understanding the operating costs and finding funds
- 3,270 items invoiced & reported



Facility Expenses (non-SWF/DNR*)

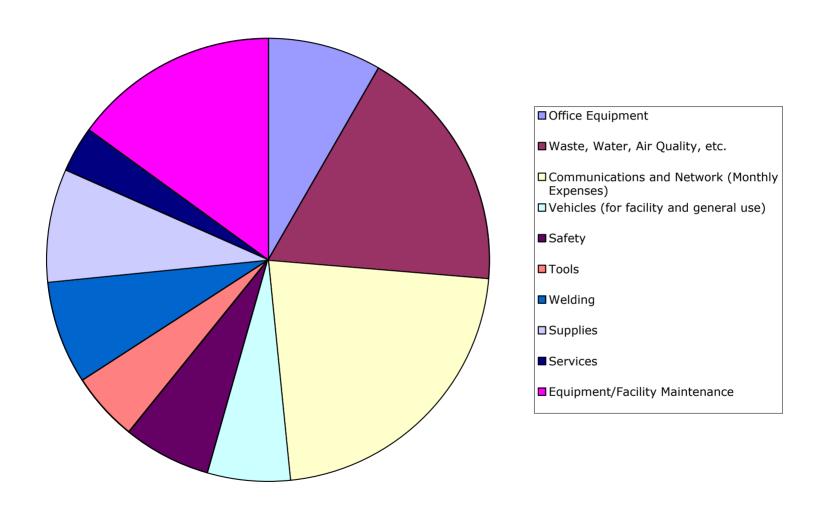
- 4.1.3 Office Equipment
- 4.1.4 Waste, Water, Air Filters, etc.
- 4.1.5 Network/Telephone
- 4.1.6 Vehicles
- 4.1.7 Safety
- 4.1.8 Tools
- 4.1.9 Welding Supplies
- 4.1.10 Laboratory Supplies
- 4.1.11 Services (shipping, cleaning, snow plowing)
- 4.1.12 Equipment/facility Maintenance







Laboratory Expenses (FY02)





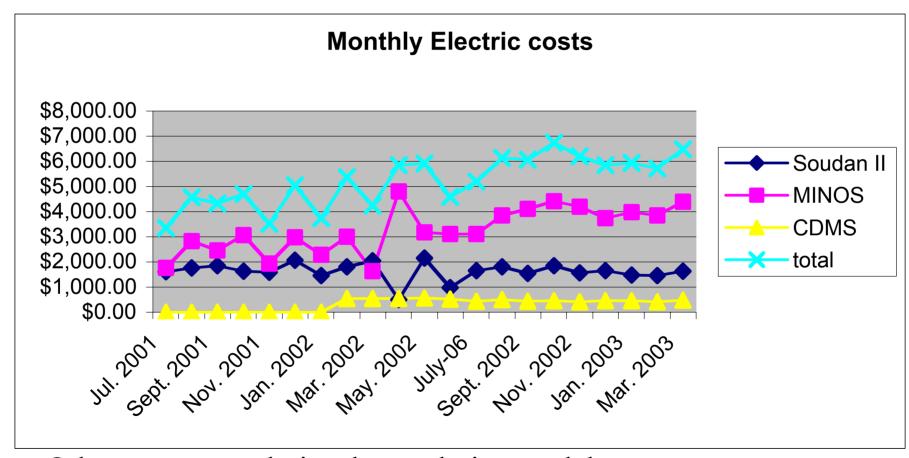
FY03 Planning

This summary was prepared					
and some assumptions abou			on operation	is (vs const	ruction).
Item	FY02	FY03 est			
DNR					
Labor (incl. Hoistman)	185,000	164,800			
Hoisting	110,000	74,778			
Electricity	52,000	53,560			
Administration	26,000	26,780			
Cavern Lease	20,000	20,600			+
Miscellaneous	5,000	5,150			+
Miscentineous	3,000	3,130			+
Sub-total	398,000	345,668			+
					+
Overhead (5%)	19,900	17,283			
Total DNR FY02	417,900	362,951			
Laboratory Operations					
Telephone/Network	45,062				
Surface Building Lease	43,200				
Utility Vehicle Rental	19,370				+
Computers/Office Equip	16,996				+
	10,990				+
Gas/Welding Supplies	13,499			1	+
Fuel and Maintenance	13,432				
Installation supplies	10,856				
Shift Leader Housing	10,426				
Laboratory Tools	9,503				
Porta-john	9,288				
Chiller					+
Surface Building Utilities	7,947				+
Auto Rental	7,131				+
					+
Lab Safety Equipment	5,155				
Crew PPE	5,025				
Auto Gas	3,703				
Travel	3,127				
G-men	2,687				
Cell Phones, Home Internet	2 318				
Potable Water					
Miscellaneous (minor) infra					+
Auto Maintenance					+
					-
Shipping/Customs	1,282				
Sub-total					
Overhead (26%)					
Total Laboratory	308,193	317,439			
	ĺ í	,			
					+
					+
MineCrew SWF (burdene	47				+
					+
Supervisor	130,916				+
Safety Coordinator	100,278				
Administrative Assistant	52,708				
Crew boss (2FTE)	134,000				
Technician (2FTE)	111,514				
Total SWF	529,416	550,593			
	,	,			
Total	1,255,509	1,230,983			+
10111	1,233,309	1,230,703			+
EVO2 DDD Off Dariest		750 000			+
FY03 PPD Off Project	-	750,000		1	+
WIDG & 4.4.6 E		100			
WBS 3.4.1.6 FY03	I	480,983			

Final allocation will be different



DNR Expenses



Other expenses: hoist charge, hoistman, labor, administration



FY04 Planning

Item	FY02	FY03 est	FY04 eap	FY04-Bill	
DNR					
Labor (incl. Hoistman)	185,000	164,800	40,000	22,500	
On-Call				47,520	
OT				17,880	
Special Events				5,000	
Hoisting	110,000	74,778	30,000	34,344	Based on extrapolation of the previous 21 mo.
Electricity	52,000	53,560	50,000	89,640	of the previous 21 mo.
Administration	26,000	26,780	27,500	18,720	Includes \$12K CDMS
Cavern Lease	20,000	20,600	20,000	40,000	and \$28K MINOS
Miscellaneous	5,000	5,150	5,000	4,400	
Yearly Indirect Cost				2,000	Cage Repair and DNR
Sub-total	398,000	345,668	172,500	282,004	supplies
Overhead (5%_26%-04))	19,900	17,283	44,850	73,321	
Total DNR FY02	417,900	362,951	217,350	355,325	

FY04

Laboratory Operations	FY02		EAP	Bill	
Telephone/Network	45,062		40,000	40,000	
Surface Building Lease	43,200		43,200	43,200	
Utility Vehicle Rental	19,370		10,000	13,200	Truck-\$100/month
Computers/Office Equip	16,996		10,000	10,000	Lull-\$1000/month
Gas/Welding Supplies	13,499		3,000	3,000	
Fuel and Maintenance	13,432		12,000	12,000	
Installation supplies	10,856		7,000	7,000	
Shift Leader Housing	10,426		10,426	10,426	
Laboratory Tools	9,503		5,000	5,000	
Porta-john	9,288		6,000	6,000	
Chiller	8,400		10,000	10,000	
Surface Building Utilities	7,947		8,000	8,000	Van-\$484/month
Auto Rental	7,131		7,000	6,000	DNR covers 50% of
Lab Safety Equipment	5,155		5,000	5,000	the total cost. \$6500
Crew PPE	5,025		2,000	1,500	joint cost plus lab
Auto Gas	3,703		1,200	1,200	specific like fire system inspection,
Travel	3,127		4,000	4,000	fire extungushers etc.
G-men	2,687		3,000	3,000	-
Cell Phones, Home Internet	2,318		2,500	2,500	
Potable Water	2,241		2,000	2,000	
Miscellaneous (minor) infrastructure	2,106		2,000	200	
Auto Maintenance	1,844		1,000	1,000	
Shipping/Customs	1,282		500	500	
Sub-total	244,598		194,826	194,726	
Overhead (26%)	63,595		50,655	50,629	
Total Laboratory	308,193	317,439	245,481	245,355	

For '04 we scale down consumables and other expenses that scale with crew size



Conclusion

- 3 years data available to determine approximate operating expenses for the post-construction/operations era
- Currently starting to estimate FY04 needs
- August/September '03 will be real operations costs
- MOU agreement and initial SOW's for FY04 will be prepared this summer
- "Bottom Line" annual funding need to operate Laboratory and provide basic support for experiments
 - M&S \$250K
 - DNR \$350K
 - SWF <u>\$600K</u>

\$1200K (consistent with estimates made in FY02)